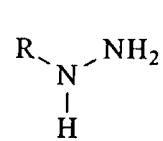
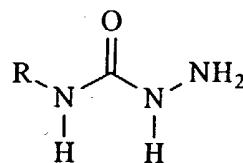


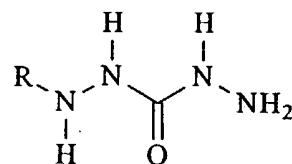
FIGURE 1



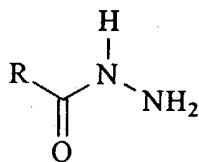
hydrazine



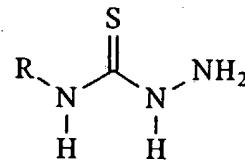
semicarbazide



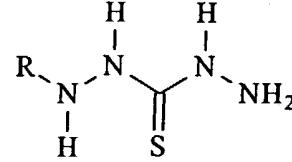
carbazide



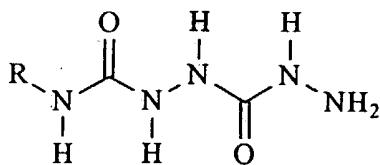
hydrazide



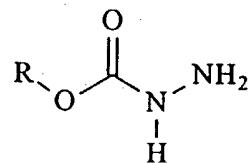
thiosemicarbazide



thiocarbazide



carbonic acid dihydrazine



hydrazine carboxylate

FIGURE 2

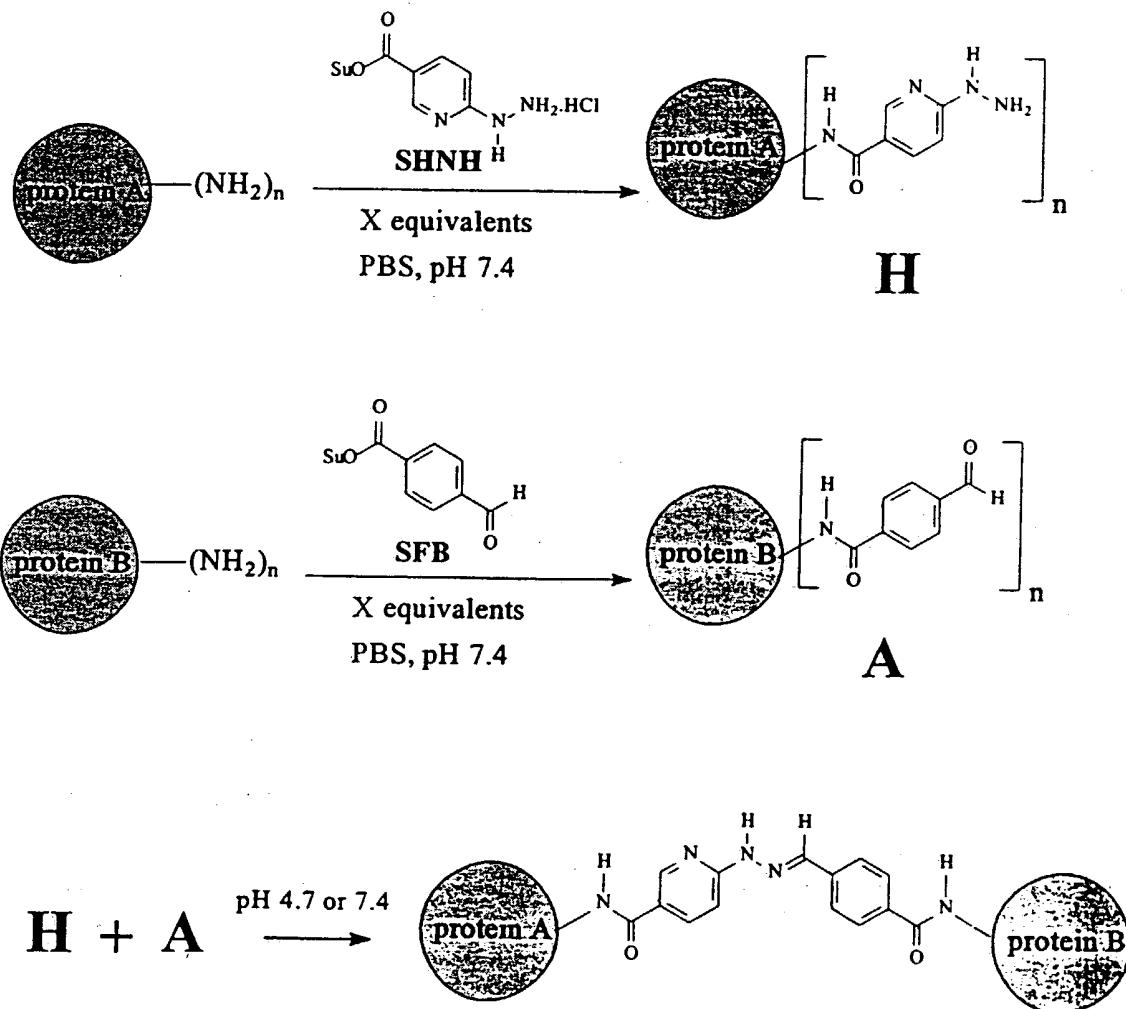
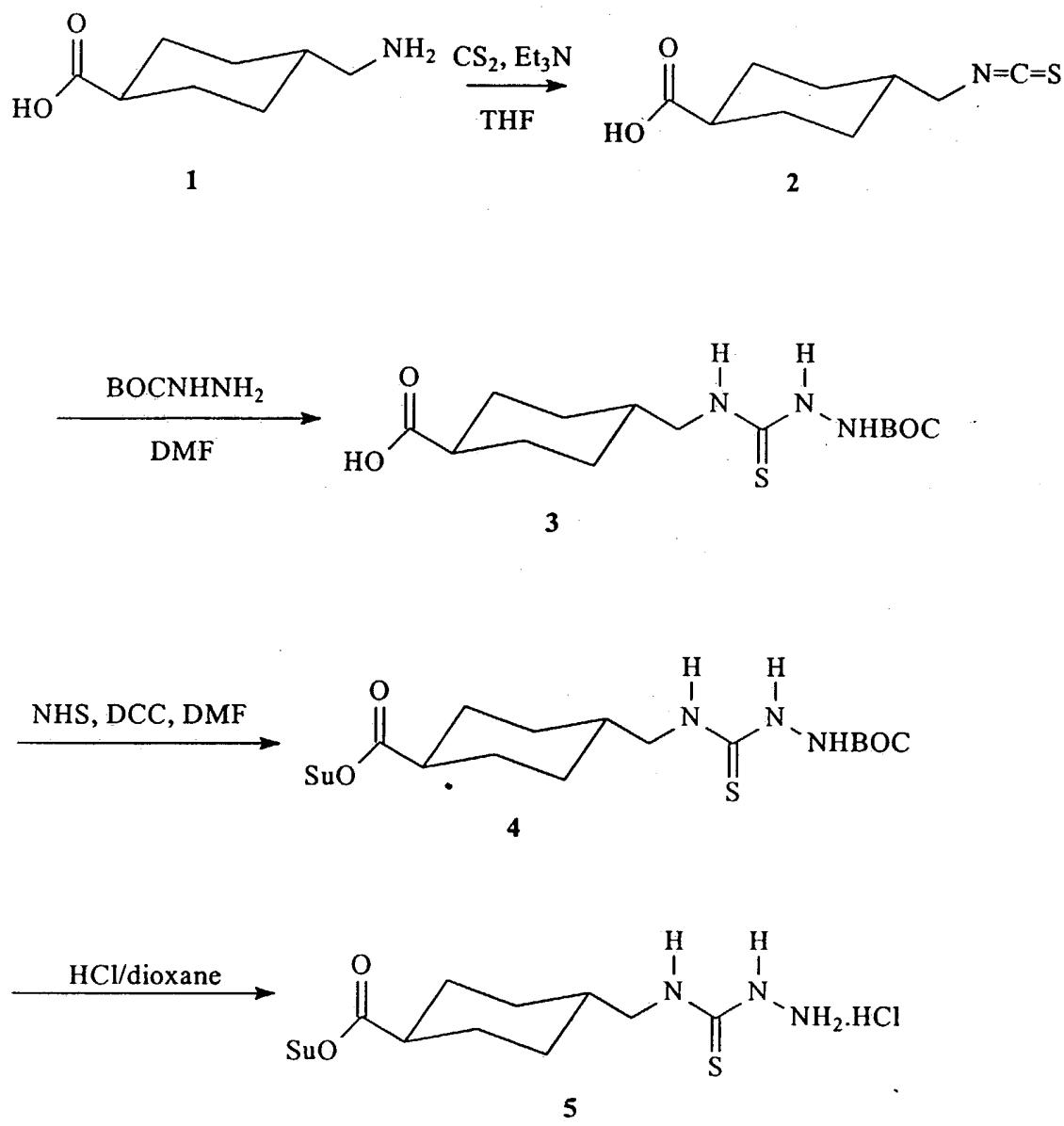


FIGURE 3



HELLER EHRLICH WHITE & MCAULIFFE LLP
Sheet 4 of 9
Title: HYDRAZINE-BASED AND C BASED BIFUNCTIONAL
CROSSLINKING REAGENTS
Applicant: David A. Schwartz
Serial No. To be assigned Filed: March 22, 2001
Our Docket No.: 37154-753

FIGURE 4

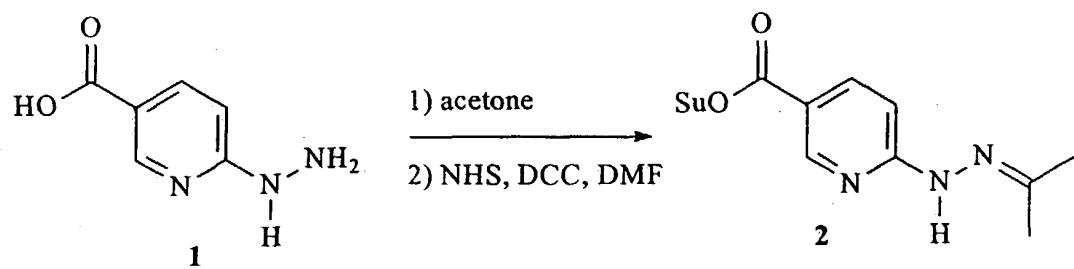
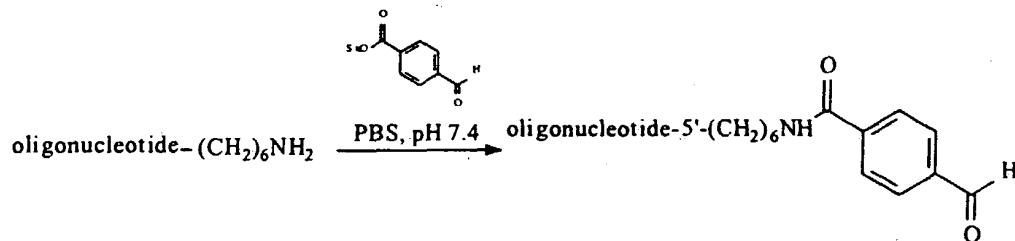
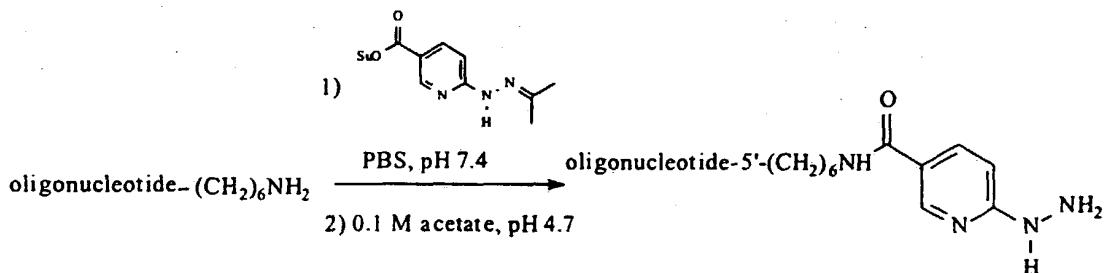


FIGURE 5

Preparation of 5'-aromatic aldehyde-modified oligonucleotide:



Preparation of 5'-heteroaromatic hydrazine-modified oligonucleotide:



Conjugation of hydrazino-modified oligonucleotide to aldehyde-modified oligonucleotide

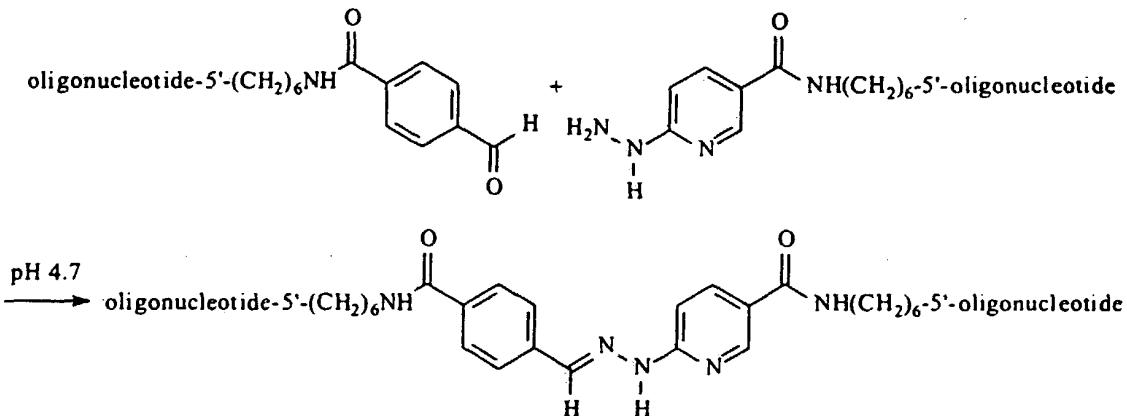


FIGURE 6

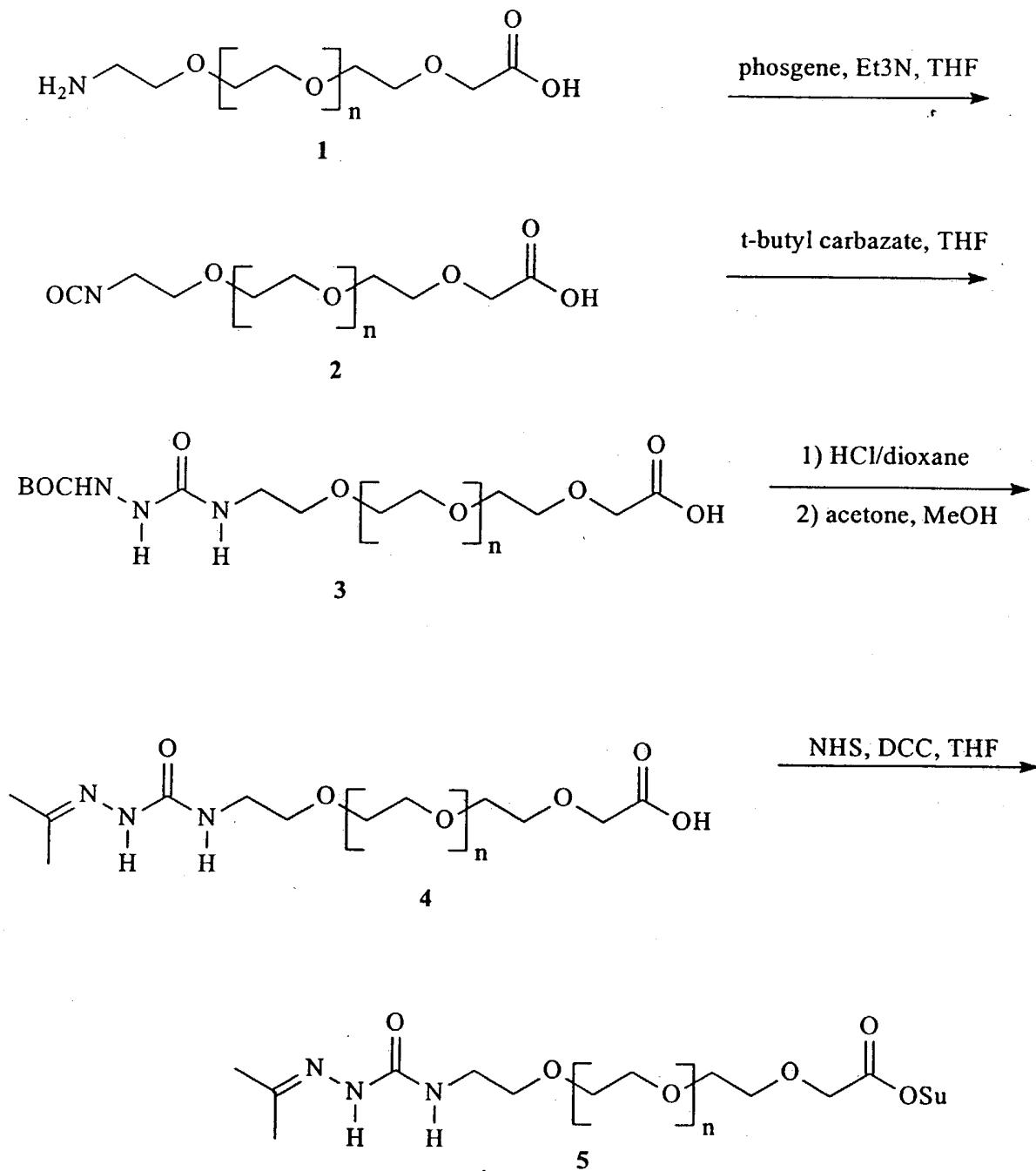


FIGURE 7

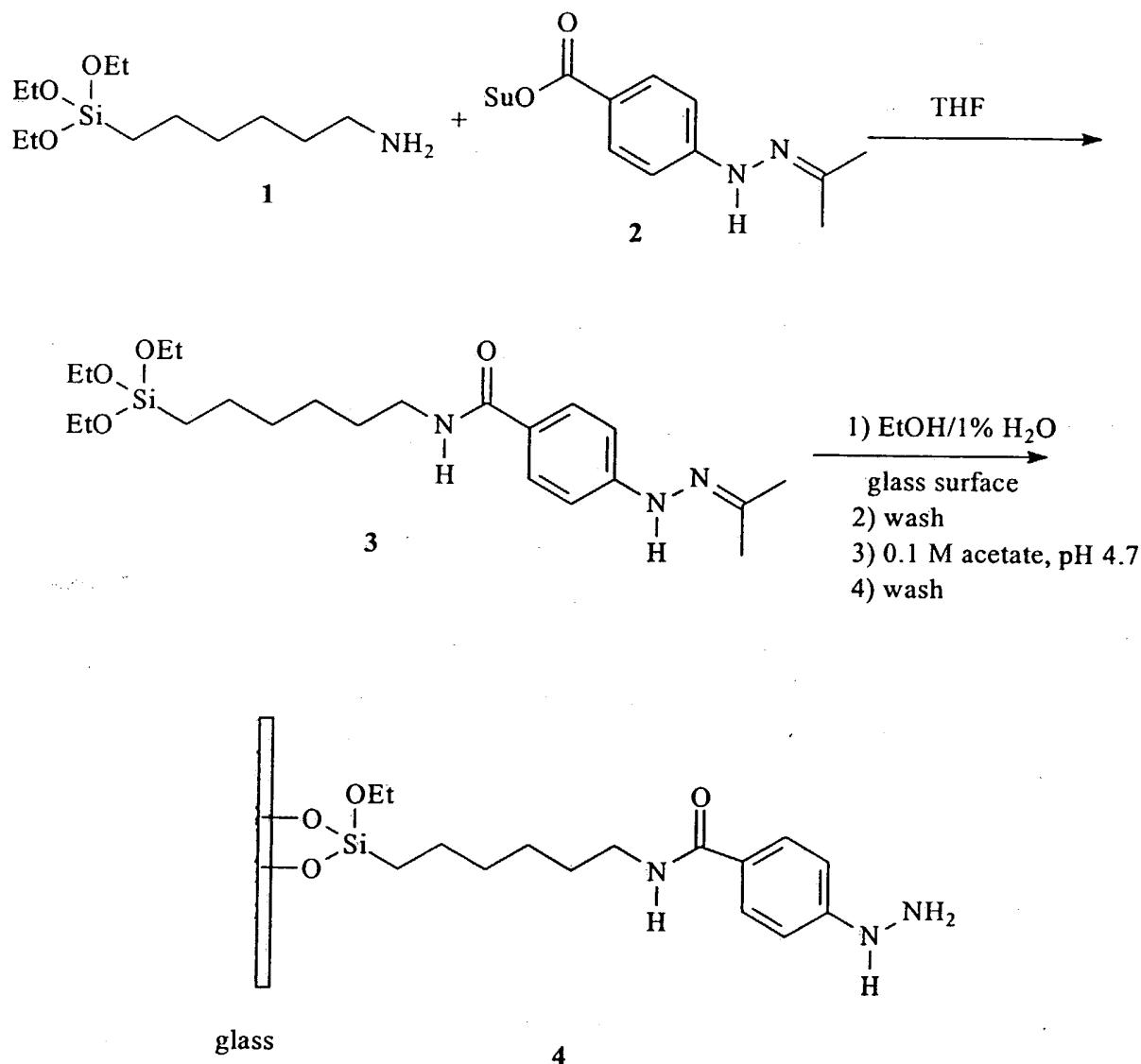


FIGURE 8

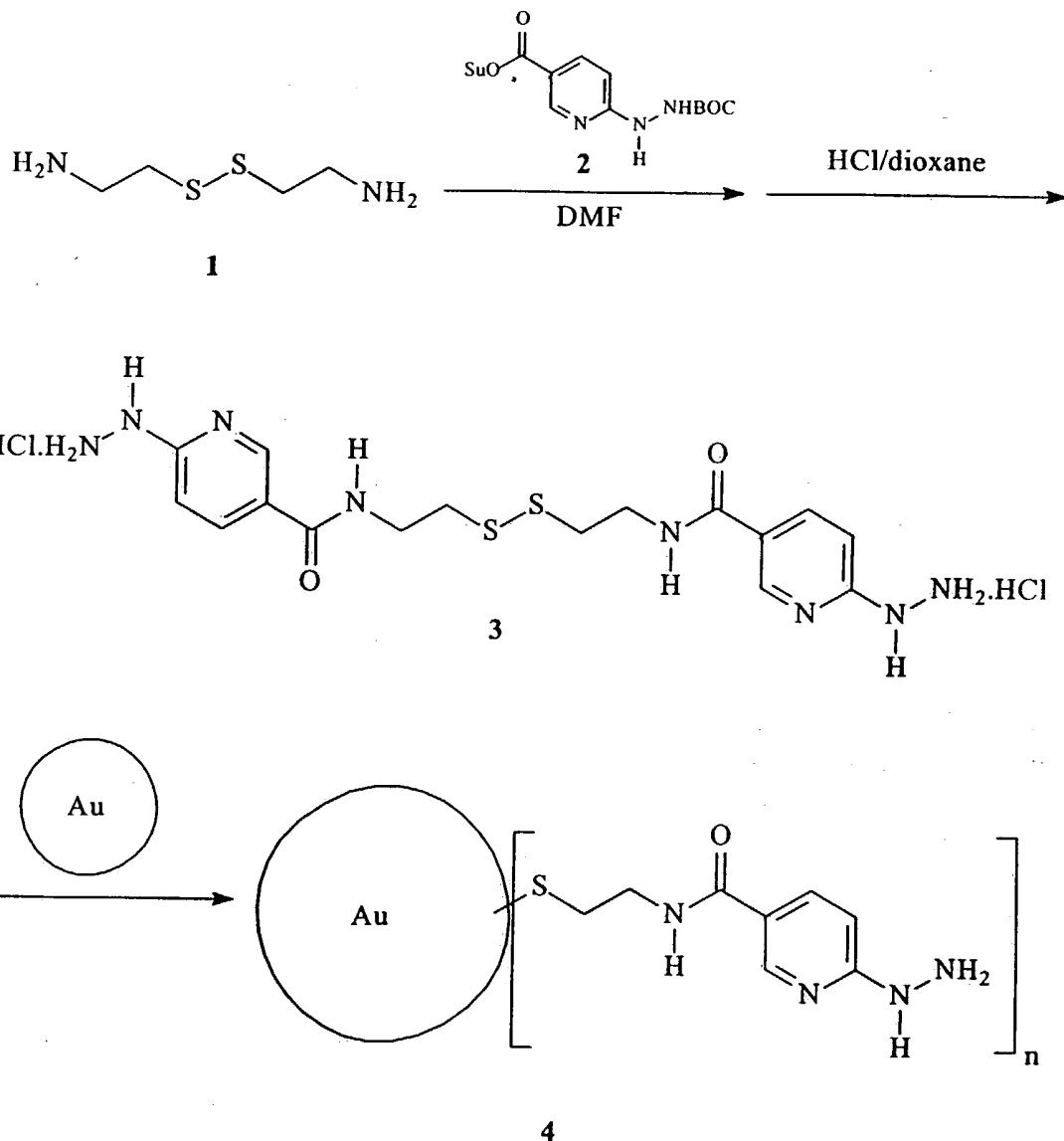


FIGURE 9

